

Project Name I-5 Everett HOV

Mainline Design Parameters- SR-5 Northbound & Southbound (LR & LL Lines)

This checklist is to confirm interpretation of standards.

Design Element (LR & LL Lines)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference
Design Class			I-1. DM Figure 440-4 (May 2001)
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)
Design Speed (Posted Speed)		ENNF	70 mph DM Section 440.04 (2002) 55mph for existing elements of the Horizontal & Vertical Alignments, <i>See project analyses and Existing mainline deviations report.</i> 60 mph (Upper range) at the ramp connections. DM Section 940.05(1) and Figure 940-1 (Sept. 2002).
ADT		Year 2020	"6925" Peak Hourly Volume. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity.</i> Parsons Brinckerhoff, 2003.
Truck Percentage			5%
Access Control		MS	Full. DM Figure 440-4 (May 2001), DM 1430.04
Median Width		MS	DM Section 440.10 and Figure 440-4 (May 2001)
Vertical Clearance		MS	DM Section 1120.04(5) and Figure 1120-1 (Sept. 2002)
Right-of-Way Width		MS	As required. Not less than those required for necessary cross section elements. DM Figure 440-4 (May 2001)
Grade			
Maximum Grade		ENNF	Existing 5.1% downgrade. <i>See project analyses and Existing mainline deviations report.</i> Rolling / Level Terrain maximum 4% / 3%, DM Section 440.15 and Figure 440-4, Note 11 (May 2001) (5% maximum downgrade in Rolling Terrain) (4% maximum downgrade in Level Terrain)
Roadway			
Number of Lanes		MS	3-4 General Purpose lanes and 1 HOV lane
Lane Width		MS	12 feet. DM Section 440.08 and Figure 440-4 (May 2001)
Turning Roadway Width	N/A		
Channelization Tapers	N/A		
Lane Transitions	N/A		
Max. Superelevation		ENNF/MS	10%. Max chart. DM Section 640.05(1) (Feb. 2002), Figure 640-11a (May 2002) <i>See project analyses and Existing mainline deviations report.</i>

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

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Design Element (LR & LL Lines)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference
Superelevation Transitions		MS	DM Section 640.05(4) Figure 640.13a-e (Feb. 2002)
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)
Shoulders			
Shoulder Width – Inside		MS	10 feet. DM Figure 440-4 (May 2001)
Shoulder Width - Outside		MS	10 feet. DM Figure 440-4 (May 2001)
Shoulder Cross Slopes		MS	2% - 6%. Max. Difference between lane and shoulder is 8%. DM 640.04(3), (Feb. 2002)
Intersection Design			
Design Vehicle	N/A		
Intersection Radii - Left	N/A		
Intersection Radii – Right	N/A		
Intersection Angle	N/A		
Sight Distance	N/A		
Horizontal Alignment			
Stopping Sight Distance		ENNF	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002) <i>See project analyses and Existing mainline deviations report.</i>
Vertical Alignment			
Passing Sight Distance		ENNF	DM Section 650.04 (Nov. 1999) and Fig. 650-1, (Oct. 2002) <i>See project analyses and Existing mainline deviations report.</i>
Decision Sight Distance		ENNF	DM Section 650.06 (Nov. 1999) and Fig. 650-5 (Oct. 2002) <i>See project analyses and Existing mainline deviations report.</i>
Roadside			
Fill Slopes		MS	DM 64.07 (Feb. 2002) Figure 640-3 (Feb. 2002)
Ditch Inslopes		MS	DM 64.07 (Feb. 2002) Figure 640-3 (Feb. 2002)
Back Slopes & Cut Slopes		MS	DM 64.07 (Feb. 2002) Figure 640-3 (Feb. 2002)
Clearzone		MS	DM Section 700.04 and 700.05 (May 2003) and Figure 700-1 (May 2003)
Barrier Standard Run			
Standard Height		MS	DM 710.08 Figure 710-7 (Dec. 2003)
Shy Distance		MS	DM 710.05(1) (May 2004)

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

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Design Element (LR & LL Lines)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference
Barrier Transition Section		MS	DM Fig. 710-10 (Dec. 2003)
Barrier End Treatment		MS	DM 710.08 (Dec. 2003)
Impact Attenuator		MS	DM 720.02 (Sept. 2002) Type and Size based on Fig. 720-1 (Sept. 2002)

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

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Ramp Design Parameters – HOV Broadway SB On Ramp (EL Line)

This checklist is to confirm interpretation of standards.

Design Element (EL Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference																					
Design Class			I-1. DM Figure 440-4 (May 2001)																					
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)																					
Design Speed (Posted Speed)		MS	45 mph at Sta. EL 18+44 DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)																					
ADT	N/A																							
Truck Percentage	N/A																							
Access Control		MS	Full. DM Figure 440-4 (May 2001)																					
Grade																								
Maximum Grade		MS	5% Upgrade & 7% Downgrade. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)																					
Ramp																								
Number of Lanes		MS	1 Lane. Based on volume determined by traffic analysis.																					
Lane Width		MS	15 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)																					
Turning Roadway Width		MS	15 feet. DM Section 640.04(2), Figure 640-9a (Feb. 2002)																					
Channelization Tapers			See Lane Transitions below																					
Lane Transitions		MS	1:50 (narrowing from 15-12 feet). DM Section 620.07(1) (May 2004), Chapter 940 (Sept. 2002)																					
Max. Superelevation		MS	10%. DM Section 640.05 (Feb. 2002) <table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> </tr> </thead> <tbody> <tr> <td>EL 12+65</td> <td>60 mph</td> <td>3%</td> </tr> <tr> <td>EL 18+44</td> <td>45 mph</td> <td>3%</td> </tr> <tr> <td>EL 23+44</td> <td>45 mph</td> <td>4%</td> </tr> <tr> <td>EL 29+59</td> <td>40 mph</td> <td>6%</td> </tr> <tr> <td>EL 31+27</td> <td>40 mph</td> <td>6%</td> </tr> <tr> <td>EL 34+83</td> <td>40 mph</td> <td>6%</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	EL 12+65	60 mph	3%	EL 18+44	45 mph	3%	EL 23+44	45 mph	4%	EL 29+59	40 mph	6%	EL 31+27	40 mph	6%	EL 34+83	40 mph	6%
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>																						
EL 12+65	60 mph	3%																						
EL 18+44	45 mph	3%																						
EL 23+44	45 mph	4%																						
EL 29+59	40 mph	6%																						
EL 31+27	40 mph	6%																						
EL 34+83	40 mph	6%																						
Superelevation Transitions		MS	DM Section 640.05(4) and (5), Figure 640-14b (Feb. 2002)																					
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)																					
Ramp Shoulders																								
Shoulder Width – Inside		MS	2 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)																					

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

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Design Element (EL Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference			
Shoulder Width - Outside		MS	8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)			
Shoulder Cross Slopes		MS	Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)			
Ramp Terminal Design						
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)			
Intersection Radii - Left		MS	50 ft. DM Chapter 910 and Fig. 910-19 (May 2001)			
Intersection Radii – Right		MS	50 ft. DM Chapter 910 and Fig. 910-8 (May 2001)			
Intersection Angle	N/A					
Sight Distance	N/A					
Horizontal Alignment						
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)			
			<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>
			EL 12+65	55 mph	425 feet	960 feet
			EL 18+44	45 mph	425 feet	920 feet
			EL 23+44	45 mph	360 feet	787 feet
			EL 30+62	40 mph	305 feet	885 feet
			EL 31+17	40 mph	305 feet	978 feet
			EL 34+83	35 mph	250 feet	428 feet
Vertical Alignment						
Stopping Sight Distance		MS	DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (Oct. 2002)			
			<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>
			EL 15+00	45 mph	360 feet	363 feet
			EL 30+50	40 mph	305 feet	307 feet
			EL 34+35	40 mph	305 feet	340 feet
Decision Sight Distance	N/A					
Roadside						
Fill Slopes			DM Fig. 640-6a (Feb. 2002)			
Ditch Inslopes			DM Fig. 640-6a(Feb. 2002)			
Back Slopes & Cut Slopes			DM Fig. 640-6a (Feb. 2002)			
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)			

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

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Design Element (EL Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference		
Ramp Spacing	N/A				
Gore Width			10+8+8=26ft DM Section 940.06(4), Fig. 940-9b (Sept. 2002)		
Gore Radius		MS	4 feet DM Section 940.06(4), Fig. 940-9b (Sept. 2002)		
Acceleration Length		MS	DM Section 940.06 (4a) (Sept. 2002), Figure 940-8 (Sept. 2002) and HOV Direct Access Design Guide Fig. 5-2, 5-4 (April 1998), DM Supplement Left-Side Direct Access Connections (Sept. 1999)	<u>Ramp</u> EL (HOV 50-60 mph)	<u>Length Required</u> 460 feet
					<u>Length Provided</u> 621 feet
Gap Acceptance Length (Parallel type on-connections only)		MS	DM Section 940.06 (4b) (Sept. 2002), Fig. 940-9b (Sept. 2002) and HOV Direct Access Design Guide Fig. 5-2 (April 1998)	<u>Ramp</u> EL (HOV at 60 mph)	<u>Length Required</u> 771 feet
					<u>Length Provided</u> 823 feet
Deceleration Length	N/A				
Ramp/Mainline Tapers		MS	DM Chapter 940 (Sept. 2002)	<u>Ramp</u> EL	<u>Taper Required</u> 300 feet
					<u>Taper Provided</u> 300 feet
Enforcement Area		MS	DM Section 1050.06(7), Fig. 1050-4a,b & 5a,b (May 2003)		
Ramp Meter Storage	N/A				

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

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Project Name I-5 Everett HOV

Ramp Design Parameters – NB HOV Off Ramp to Broadway (ER Line)

This checklist is to confirm interpretation of standards.

Design Element (ER Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference
Design Class			I-1. DM Figure 440-4 (May 2001)
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)
Design Speed (Posted Speed)		MS	40 mph at Sta. ER 15+12, DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)
ADT		Year 2020	“2235” Peak Hourly Volume. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.
Truck Percentage			
Access Control		MS	Full. DM Figure 440-4 (May 2001)
Grade			
Maximum Grade		ENN	6.98% Upgrade. See Deviation No. 1. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)
Ramp			
Number of Lanes		MS	1 Lane. Based on volume determined by traffic analysis.
Lane Width		MS	15 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)
Turning Roadway Width		MS	15 feet. DM Section 640.04(2), Figure 640-9a (Feb. 2002)
Channelization Tapers			See Lane Transitions below
Lane Transitions		MS	1:60 (narrowing from 15-12 feet). DM Section 620.07(1) (May 2004), Chapter 940 (Sept. 2002)
Max. Superelevation		MS	10%. DM Section 640.05 and Figure 640-11a (Feb. 2002)
Superelevation Transitions		MS	DM Section 640.05(4) and (5), Figure 640-14b (Feb. 2002)
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)
Ramp Shoulders			
Shoulder Width – Inside		MS	2 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)
Shoulder Width - Outside		MS	8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)
Shoulder Cross Slopes		MS	Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)
Ramp Terminal Design			
Design Vehicle	N/A		
Intersection Radii - Left	N/A		

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

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Design Element (ER Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference												
Intersection Radii – Right	N/A														
Intersection Angle	N/A														
Sight Distance	N/A														
Horizontal Alignment															
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002) <table> <thead> <tr> <th><u>Location</u></th><th><u>Design Speed</u></th><th><u>Required</u></th><th><u>Proposed</u></th></tr> </thead> <tbody> <tr> <td>ER 16+63</td><td>40 mph</td><td>305 feet</td><td>310 feet</td></tr> <tr> <td>ER 20+49</td><td>40 mph</td><td>305 feet</td><td>305 feet</td></tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>	ER 16+63	40 mph	305 feet	310 feet	ER 20+49	40 mph	305 feet	305 feet
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>												
ER 16+63	40 mph	305 feet	310 feet												
ER 20+49	40 mph	305 feet	305 feet												
Vertical Alignment															
Stopping Sight Distance		MS	DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (Oct. 2002) <table> <thead> <tr> <th><u>Location</u></th><th><u>Design Speed</u></th><th><u>Required</u></th><th><u>Proposed</u></th></tr> </thead> <tbody> <tr> <td>ER 19+15</td><td>40 mph</td><td>305 feet</td><td>324 feet</td></tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>	ER 19+15	40 mph	305 feet	324 feet				
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>												
ER 19+15	40 mph	305 feet	324 feet												
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (Oct. 2002)												
Roadside															
Fill Slopes			DM Fig. 640-6a (Feb. 2002)												
Ditch Inslopes			DM Fig. 640-6a (Feb. 2002)												
Back Slopes & Cut Slopes			DM Fig. 640-6a (Feb. 2002)												
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)												
Gore Width			For off connections per DM Section 940.06(5b) (Sept. 2002) and Fig. 940-11a (Sept. 2002) Reserve Area Length for 70mph Design Speed = 55 ft <table> <thead> <tr> <th><u>Ramp</u></th><th><u>Reserve Area Length Provided</u></th><th><u>Required Gore Width at Physical Nose</u></th><th><u>Provided Gore Width at Physical Nose</u></th></tr> </thead> <tbody> <tr> <td>ER</td><td>88 feet</td><td>12+10=22 feet</td><td>22 feet</td></tr> </tbody> </table>	<u>Ramp</u>	<u>Reserve Area Length Provided</u>	<u>Required Gore Width at Physical Nose</u>	<u>Provided Gore Width at Physical Nose</u>	ER	88 feet	12+10=22 feet	22 feet				
<u>Ramp</u>	<u>Reserve Area Length Provided</u>	<u>Required Gore Width at Physical Nose</u>	<u>Provided Gore Width at Physical Nose</u>												
ER	88 feet	12+10=22 feet	22 feet												
Gore Radius		MS	4 feet minimum. DM Section 940.06(5b) and Fig. 940-11a,b (Sept. 2002)												
Acceleration Length	N/A														
Gap Acceptance Length (Parallel type on-connections only)	N/A														

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

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Design Element (ER Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference								
Deceleration Length		MS	DM Section 940.06 (5a) (Sept. 2002), Figure 940-10 (Sept. 2002) and HOV Direct Access Design Guide Fig. 5-6 (April 1998), DM Supplement Left-Side Direct Access Connections (Sept. 1999)								
			<table> <thead> <tr> <th>Ramp</th> <th>Length Required</th> <th>Length Provided</th> </tr> </thead> <tbody> <tr> <td>ER (70-40 mph)</td> <td>440 feet</td> <td>500 feet</td> </tr> </tbody> </table>			Ramp	Length Required	Length Provided	ER (70-40 mph)	440 feet	500 feet
Ramp	Length Required	Length Provided									
ER (70-40 mph)	440 feet	500 feet									
Ramp/Mainline Tapers		MS	20:1. DM Chapter 940, Figure 949-12a (Sept. 2002)								
Enforcement Area		MS	DM Section 1050.06(7), Fig. 1050-4a,b & 5a,b (May 2003) Will be provided at gore area between the SB On ramp and the NB Off ramp								
Ramp Meter Storage	N/A										

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Ramp Design Parameters – Broadway SB On Ramp (FL Line)

This checklist is to confirm interpretation of standards.

Design Element (FL Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference						
Design Class			I-1. DM Figure 440-4 (May 2001)						
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)						
Design Speed (Posted Speed)		MS	0 mph at Sta. FL 17+50 (ramp meter). DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)						
ADT	N/A								
Truck Percentage	N/A								
Access Control		MS	Full. DM Figure 440-4 (May 2001)						
Grade									
Maximum Grade		MS	3%. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)						
Ramp									
Number of Lanes		MS	2 Lanes. Based on volume determined by traffic analysis						
Lane Width		MS	25 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)						
Turning Roadway Width		MS	24 feet on tangent. DM Section 640.04(2), Figure 640-8a (Feb. 2002)						
Channelization Tapers			See Lane Transitions below						
Lane Transitions		MS	300ft lane taper (on- ramp two lanes merges into one). DM Section 620.07(1) (May 2004), Chapter 940 (Sept. 2002)						
Max. Superelevation		MS	10%. DM Section 640.05 (Feb. 2002) <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left; width: 30%;">Location</th> <th style="text-align: center; width: 30%;">Design Speed</th> <th style="text-align: center; width: 40%;">Required</th> </tr> <tr> <td>FL 15+71</td> <td style="text-align: center;">60 mph</td> <td style="text-align: center;">3%</td> </tr> </table>	Location	Design Speed	Required	FL 15+71	60 mph	3%
Location	Design Speed	Required							
FL 15+71	60 mph	3%							
Superelevation Transitions		MS	DM Section 640.05(4) and (5), Figure 640-14a (Feb. 2002)						
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)						
Ramp Shoulders									
Shoulder Width – Inside		MS	2 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)						
Shoulder Width - Outside		MS	8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)						
Shoulder Cross Slopes		MS	Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)						
Ramp Terminal Design									
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)						

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

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Design Element (FL Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference			
Intersection Radii - Left		MS	50 ft. DM Chapter 910 and Fig. 910-19 (May 2001)			
Intersection Radii – Right		MS	50 ft. DM Chapter 910 and Fig. 910-8 (May 2001)			
Intersection Angle	N/A					
Sight Distance	N/A					
Horizontal Alignment						
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)			
			<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>
			FL 15+71	60 mph	570 feet	1050 feet
Vertical Alignment						
Stopping Sight Distance		MS	DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (Oct. 2002)			
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (Oct. 2002)			
Roadside						
Fill Slopes			DM Fig. 640-6a (Feb. 2002)			
Ditch Inslopes			DM Fig. 640-6a (Feb. 2002)			
Back Slopes & Cut Slopes			DM Fig. 640-6a (Feb. 2002)			
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)			
Ramp Spacing		MS	DM Fig. 940-5 (Sept. 2002)			
			<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>	
			41 st St. SB Off (GL) to Broadway SB On (FL)	500 feet	2600 feet	
			Broadway SB On (FL) to SR 526 SB Off (DL)	2000 feet	14000 feet	
Gore Width		MS	10+16+4=30ft DM Section 940.06(4), Fig. 940-9C (Sept. 2002)			
Gore Radius		MS	4 feet minimum. DM Section 940.06(5b) and Fig. 940-11a,b (Sept. 2002)			
Acceleration Length		MS	DM Section 940.06 (4a) (Sept. 2002), Figure 940-8 (Sept. 2002) and HOV Direct Access Design Guide Fig. 5-2, 5-4 (April 1998) <i>>3% grade from 30-45mph</i>			
			<u>Ramp</u>	<u>Length Required</u>	<u>Length Provided</u>	
			FL (0-60mph)	1170 feet	1200 feet	
Gap Acceptance Length (Parallel type on-connections only)		MS	DM Section 940.06 (4b) (Sept. 2002), Fig. 940-9b, 940-9c (Sept. 2002) and HOV Direct Access Design Guide Fig. 5-2 (April 1998)			
			<u>Ramp</u>	<u>Length Required</u>	<u>Length Provided</u>	
			FL	300 feet	450 feet	

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

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Design Element (FL Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference
Deceleration Length	N/A		
Ramp/Mainline Tapers		MS	DM Chapter 940 (Sept. 2002) <u>Ramp</u> <u>Taper Required</u> <u>Taper Provided</u> FL 300 feet 300 feet
Enforcement Area	N/A		
Ramp Meter Storage			2 metered lanes, no HOV bypass, and approx. 2200 ft storage. <i>I-5 Everett HOV Ramp Metering Meeting notes, 8/26/04.</i>

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Ramp Design Parameters- NB Off Ramp to Broadway (FR Line)

This checklist is to confirm interpretation of standards.

Design Element (FR Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference															
Design Class			I-1. DM Figure 440-4 (May 2001)															
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)															
Design Speed (Posted Speed)		MS	45 mph at Sta. FR 30+75. DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)															
ADT		Year 2020	"1805" Peak Hourly Volume. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.															
Truck Percentage																		
Access Control		MS	Full. DM Figure 440-4 (May 2001)															
Grade																		
Maximum Grade		MS	5% Upgrade & 7% Downgrade. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)															
Ramp																		
Number of Lanes		MS	2 Lanes. Based on volume determined by traffic analysis															
Lane Width		MS	12.5 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)															
Turning Roadway Width		MS	25 feet. DM Section 640.04(2), Figure 640-8a (Feb. 2002)															
Channelization Tapers			See Lane Transitions below															
Lane Transitions	N/A																	
Max. Superelevation		MS	10%. DM Section 640.05 (Feb. 2002) <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Location</th> <th>Design Speed</th> <th>Proposed</th> </tr> </thead> <tbody> <tr> <td>FR 18+44</td> <td>60 mph</td> <td>2%</td> </tr> <tr> <td>FR 30+75</td> <td>45 mph</td> <td>2%</td> </tr> <tr> <td>FR 37+01</td> <td>35 mph</td> <td>5%</td> </tr> <tr> <td>FR 44+13</td> <td>25 mph</td> <td>2%</td> </tr> </tbody> </table>	Location	Design Speed	Proposed	FR 18+44	60 mph	2%	FR 30+75	45 mph	2%	FR 37+01	35 mph	5%	FR 44+13	25 mph	2%
Location	Design Speed	Proposed																
FR 18+44	60 mph	2%																
FR 30+75	45 mph	2%																
FR 37+01	35 mph	5%																
FR 44+13	25 mph	2%																
Superelevation Transitions		MS	DM Section 640.05(4) and (5), (Feb. 2002)															
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)															
Ramp Shoulders																		
Shoulder Width - Inside		MS	4 feet DM Section 940.05(4) and Figure 940-3 (Sept. 2002)															
Shoulder Width - Outside		MS	8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)															
Shoulder Cross Slopes		MS	Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)															

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Design Element (FR Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference			
Ramp Terminal Design						
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)			
Intersection Radii - Left	N/A					
Intersection Radii – Right		MS	50 ft. DM Chapter 910 and Fig. 910-8 (May 2001)			
Intersection Angle	N/A					
Sight Distance	N/A					
Horizontal Alignment						
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)			
			<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>
			FR 18+44	60 mph	570 feet	1100 feet
			FR 30+75	45 mph	360 feet	750 feet
			FR 37+01	40 mph	305 feet	330 feet
			FR 44+13	30 mph	200 feet	425 feet
Vertical Alignment						
Stopping Sight Distance		MS	DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (Oct. 2002)			
			<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>
			FR 29+50	45 mph	360 feet	437 feet
			FR 39+83	30 mph	200 feet	205 feet
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (Oct. 2002)			
Roadside						
Fill Slopes			DM Fig. 640-6a (Feb. 2002)			
Ditch Inslopes			DM Fig. 640-6a (Feb. 2002)			
Back Slopes & Cut Slopes			DM Fig. 640-6a (Feb. 2002)			
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)			
Ramp Spacing		MS	DM Fig. 940-5 (Sept. 2002)			
			<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>	
			Broadway NB Off (FR) to 41 st St. NB On (GR)	500 feet	2800 feet	

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Design Element (FR Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference				
Gore Width		MS	For off connections per DM Section 940.06(5b) (Sept. 2002) and Fig. 940-11b (Sept. 2002) Reserve Area Length for 70mph Design Speed = 55 ft				
			Reserve Area <u>Ramp</u> <u>Length Provided</u>	Required Gore Width at Physical Nose	Provided Gore Width at Physical Nose		
			FR 360 feet	12+4+6=22 feet	22 feet		
Gore Radius		MS	4 feet minimum. DM Section 940.06(5b) and Fig. 940-11a,b (Sept. 2002)				
Acceleration Length	N/A						
Gap Acceptance Length (Parallel type on-connections only)	N/A						
Deceleration Length		MS	DM Section 940.06 (5a) (Sept. 2002), Figure 940-10 (Sept. 2002) and HOV Direct Access Design Guide Fig. 5-6 (April 1998), mainline at 70 mph:				
			<u>Ramp</u> <u>Length Required</u> <u>Length Provided</u>				
			FR (70-45 mph) 440 feet 944 feet				
Ramp/Mainline Tapers		MS	25:1 minimum. DM Chapter 940 (Sept. 2002)				
Enforcement Area	N/A						
Ramp Meter Storage	N/A						

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Ramp Design Parameters – 41st St. Off Ramp SB (GL1 Line)

This checklist is to confirm interpretation of standards.

Design Element (GL1 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference						
Design Class			I-1. DM Figure 440-4 (May 2001)						
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)						
Design Speed (Posted Speed)		MS	35 mph at Sta. GL1 14+75. DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)						
ADT	N/A								
Truck Percentage	N/A								
Access Control		MS	Full. DM Figure 440-4 (May 2001)						
Grade									
Maximum Grade		MS	7% Upgrade. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)						
Ramp									
Number of Lanes		MS	1 Lane. Based on volume determined by traffic analysis						
Lane Width		MS	12.5-15 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)						
Turning Roadway Width		MS	15 feet. DM Section 640.04(2), Figure 640-9a (Feb. 2002)						
Channelization Tapers			See Lane Transitions below						
Lane Transitions		MS	1:40 (narrowing from 15-12.5 feet). DM Section 620.07(1) (May 2004), Chapter 940 (Sept. 2002)						
Max. Superelevation		MS	10%. DM Section 640.05 (Feb. 2002) and Fig. 640-11a (Feb. 2002)						
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> </tr> </thead> <tbody> <tr> <td>GL1 13+85</td> <td>30 mph</td> <td>2%</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	GL1 13+85	30 mph	2%
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>							
GL1 13+85	30 mph	2%							
Superelevation Transitions		MS	DM Section 640.05(4) and (5), (Feb. 2002)						
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)						
Ramp Shoulders									
Shoulder Width – Inside		MS	4 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)						
Shoulder Width - Outside		MS	8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)						
Shoulder Cross Slopes		MS	Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)						
Ramp Terminal Design									
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)						

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2

1/12/2005

Project Name I-5 Everett HOV

Design Element (GL1 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference												
Intersection Radii - Left		MS	50 ft. DM Chapter 910 and Fig. 910-19 (May 2001)												
Intersection Radii – Right		MS	50 ft. DM Chapter 910 and Fig. 910-8 (May 2001)												
Intersection Angle		MS	103.72°. DM Fig. 910-19 (May 2001)												
Sight Distance		ENF	480 feet for 35 mph cross street design speed. DM Section 910.10 and Figure 910-6 (May 2001) GL1 (one directional turn) = 570 feet (MS – direction of turn) and 160 feet (ENF -opposing traffic)- Project adds traffic signal												
Horizontal Alignment															
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)												
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> <th><u>Proposed</u></th> </tr> </thead> <tbody> <tr> <td>GL1 13+85</td> <td>30 mph</td> <td>200 feet</td> <td>980 feet</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>	GL1 13+85	30 mph	200 feet	980 feet				
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>												
GL1 13+85	30 mph	200 feet	980 feet												
Vertical Alignment															
Stopping Sight Distance		MS	DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (Oct. 2002)												
			<i>See Evaluate Upgrade No. 1.</i> <table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> <th><u>Proposed</u></th> </tr> </thead> <tbody> <tr> <td>GL1 10+05</td> <td>25 mph</td> <td>155 feet</td> <td>178 feet</td> </tr> <tr> <td>GL1 14+75</td> <td>35 mph</td> <td>250 feet</td> <td>Sag Curve Requires Illumination</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>	GL1 10+05	25 mph	155 feet	178 feet	GL1 14+75	35 mph	250 feet	Sag Curve Requires Illumination
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>												
GL1 10+05	25 mph	155 feet	178 feet												
GL1 14+75	35 mph	250 feet	Sag Curve Requires Illumination												
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (Oct. 2002)												
Roadside															
Fill Slopes			DM Fig. 640-6b (Feb. 2002)												
Ditch Inslopes			DM Fig. 640-6b (Feb. 2002)												
Back Slopes & Cut Slopes			DM Fig. 640-6b (Feb. 2002)												
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)												
Ramp Spacing		MS	DM Fig. 940-5 (Sept. 2002)												
			<table> <thead> <tr> <th><u>Spacing Type</u></th> <th><u>Spacing Req'd</u></th> <th><u>Spacing Provided</u></th> </tr> </thead> <tbody> <tr> <td>HL-Line to GL1-Line</td> <td>2000 feet</td> <td>4000 feet</td> </tr> <tr> <td>41st St. SB Off (GL1) to Broadway SB On (FL)</td> <td>500 feet</td> <td>2600 feet</td> </tr> </tbody> </table>	<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>	HL-Line to GL1-Line	2000 feet	4000 feet	41 st St. SB Off (GL1) to Broadway SB On (FL)	500 feet	2600 feet			
<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>													
HL-Line to GL1-Line	2000 feet	4000 feet													
41 st St. SB Off (GL1) to Broadway SB On (FL)	500 feet	2600 feet													

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Project Name I-5 Everett HOV

Design Element (GL1 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference										
Gore Width		PN	For off connections per DM Section 940.06(5b) (Sept. 2002) and Fig. 940-11 (Sept. 2002) Reserve Area Length for 70mph Design Speed = 55 ft <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; width: 15%;">Ramp</th> <th style="text-align: center; width: 30%;">Reserve Area Length Provided</th> <th style="text-align: center; width: 15%;">Required Gore Width at Physical Nose</th> <th style="text-align: center; width: 15%;">Provided Gore Width at Physical Nose</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">GL1</td> <td style="text-align: center;">70 feet</td> <td style="text-align: center;">12+4= 16 feet</td> <td style="text-align: center;">16 feet</td> </tr> </tbody> </table>			Ramp	Reserve Area Length Provided	Required Gore Width at Physical Nose	Provided Gore Width at Physical Nose	GL1	70 feet	12+4= 16 feet	16 feet
Ramp	Reserve Area Length Provided	Required Gore Width at Physical Nose	Provided Gore Width at Physical Nose										
GL1	70 feet	12+4= 16 feet	16 feet										
Gore Radius		MS	3 feet, with an impact attenuator. DM Section 940.06(5b) and Fig. 940-11a (Sept. 2002)										
Acceleration Length	N/A												
Gap Acceptance Length (Parallel type on-connections only)	N/A												
Deceleration Length		MS	DM Section 940.06 (5a) (Sept. 2002), Figure 940-10 (Sept. 2002) and HOV Direct Access Design Guide Fig. 5-6 (April 1998), mainline at 70 mph: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; width: 15%;">Ramp</th> <th style="text-align: center; width: 30%;">Length Required</th> <th style="text-align: center; width: 15%;">Length Provided</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">GL1 (70-35 mph)</td> <td style="text-align: center;">490 feet</td> <td style="text-align: center;">770 feet</td> </tr> </tbody> </table>			Ramp	Length Required	Length Provided	GL1 (70-35 mph)	490 feet	770 feet		
Ramp	Length Required	Length Provided											
GL1 (70-35 mph)	490 feet	770 feet											
Ramp/Mainline Tapers		MS	DM Chapter 940 (Sept. 2002) <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; width: 15%;">Ramp</th> <th style="text-align: center; width: 30%;">Taper Required</th> <th style="text-align: center; width: 15%;">Taper Provided</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">GL1</td> <td style="text-align: center;">250 feet</td> <td style="text-align: center;">300 feet</td> </tr> </tbody> </table>			Ramp	Taper Required	Taper Provided	GL1	250 feet	300 feet		
Ramp	Taper Required	Taper Provided											
GL1	250 feet	300 feet											
Enforcement Area	N/A												
Ramp Meter Storage	N/A												

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Ramp Design Parameters – NB Broadway to 41st St. On Ramp (GL2 Line)

This checklist is to confirm interpretation of standards.

Design Element (GL2 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference									
Design Class			I-1. DM Figure 440-4 (May 2001)									
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)									
Design Speed (Posted Speed)		MS	Loop ramp 25 mph. DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)									
ADT		Year 2020	“1125” Peak Hourly Volume. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.									
Truck Percentage			4%. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.									
Access Control		MS	Full. DM Figure 440-4 (May 2001)									
Grade												
Maximum Grade		MS	7.0% Upgrade. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)									
Ramp												
Number of Lanes		MS	1 Lane. Based on volume determined by traffic analysis									
Lane Width		MS	18 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)									
Turning Roadway Width		MS	18 feet. DM Section 640.04(2), Figure 640-9a (Feb. 2002)									
Channelization Tapers			See Lane Transitions below									
Lane Transitions		MS	1:20 (narrowing from 18-12.5 feet). DM Section 620.07(1) (May 2004), Chapter 940 (Sept. 2002)									
Max. Superelevation		MS	10%. DM Supplement Urban Roadways Figure 640-12b (July 2003) <table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> </tr> </thead> <tbody> <tr> <td>GL2 10+00 to 10+70</td> <td>25 mph</td> <td>2%</td> </tr> <tr> <td>GL2 12+00 to 13+00</td> <td>25 mph</td> <td>8% Matches existing 8% super</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	GL2 10+00 to 10+70	25 mph	2%	GL2 12+00 to 13+00	25 mph	8% Matches existing 8% super
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>										
GL2 10+00 to 10+70	25 mph	2%										
GL2 12+00 to 13+00	25 mph	8% Matches existing 8% super										
Superelevation Transitions		MS	DM Section 640.05(4) and (5), (Feb. 2002)									
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)									
Ramp Shoulders												
Shoulder Width – Inside		MS	4 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)									

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Design Element (GL2 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference												
Shoulder Width - Outside		MS	8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)												
Shoulder Cross Slopes		MS	Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)												
Ramp Terminal Design															
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)												
Intersection Radii - Left		MS	50 ft. DM Chapter 910 and Fig. 910-19 (May 2001)												
Intersection Radii – Right		MS	50 ft. DM Chapter 910 and Fig. 910-8 (May 2001)												
Intersection Angle	N/A														
Sight Distance	N/A														
Horizontal Alignment															
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)												
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> <th><u>Proposed</u></th> </tr> </thead> <tbody> <tr> <td>GL2</td> <td>25 mph</td> <td>155 feet</td> <td>> 155 feet</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>	GL2	25 mph	155 feet	> 155 feet				
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>												
GL2	25 mph	155 feet	> 155 feet												
Vertical Alignment															
Stopping Sight Distance		MS	DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (Oct. 2002)												
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> <th><u>Proposed</u></th> </tr> </thead> <tbody> <tr> <td>GL2 10+75</td> <td>25 mph</td> <td>155 feet</td> <td>179 feet</td> </tr> <tr> <td>GL2 12+50</td> <td>25 mph</td> <td>155 feet</td> <td>322 feet</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>	GL2 10+75	25 mph	155 feet	179 feet	GL2 12+50	25 mph	155 feet	322 feet
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>												
GL2 10+75	25 mph	155 feet	179 feet												
GL2 12+50	25 mph	155 feet	322 feet												
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (Oct. 2002)												
Roadside															
Fill Slopes			DM Fig. 640-6b (Feb. 2002)												
Ditch Inslopes			DM Fig. 640-6b (Feb. 2002)												
Back Slopes & Cut Slopes			DM Fig. 640-6b (Feb. 2002)												
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)												
Ramp Spacing	N/A														
Gore Width		MS	4+8+8=20ft DM Section 940.06(4), Fig. 940-9d (Sept. 2002)												
Gore Radius		MS	4 feet minimum. DM Section 940.06(5b) and Fig. 940-11a,b (Sept. 2002)												
Acceleration Length	N/A														
Gap Acceptance Length (Parallel type on-connections only)	N/A														

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Project Name I-5 Everett HOV

Design Element (GL2 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference
Deceleration Length	N/A		
Ramp/Mainline Tapers	N/A		
Enforcement Area	N/A		
Ramp Meter Storage	N/A		

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Ramp Design Parameters – 41st St. On Ramp NB (GR Line)

This checklist is to confirm interpretation of standards.

Design Element (GR Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference
Design Class			I-1. DM Figure 440-4 (May 2001)
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)
Design Speed (Posted Speed)		MS	0 mph at Sta. GR 12+70 (ramp meter). DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)
ADT		Year 2020	“1225” Peak Hourly Volume. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.
Truck Percentage			3%. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.
Access Control		MS	Full. DM Figure 440-4 (May 2001)
Grade			
Maximum Grade		MS	3%. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)
Ramp			
Number of Lanes		MS	2 Lanes. Based on volume determined by traffic analysis and ramp metering.
Lane Width		MS	12 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)
Turning Roadway Width		MS	20 feet on loop ramp. DM Section 640.04(2), Figure 640-8a (Feb. 2002)
Channelization Tapers			See Lane Transitions below
Lane Transitions		MS	300 feet (narrowing from 24 -12 feet). DM Section 620.07(1) (May 2004), Chapter 940(Sep2002)
Max. Superelevation		MS	10%. DM Section 640.05 (Feb. 2002)
Superelevation Transitions		MS	DM Section 640.05(4) and (5), (Feb. 2002)
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)
Ramp Shoulders			
Shoulder Width – Inside		MS	4 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)
Shoulder Width - Outside		MS	8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)
Shoulder Cross Slopes		MS	Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)
Ramp Terminal Design			
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)
Intersection Radii - Left		MS	50 ft. DM Chapter 910 and Fig. 910-19 (May 2001)

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Design Element (GR Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference			
Intersection Radii – Right		MS	50 ft. DM Chapter 910 and Fig. 910-8 (May 2001)			
Intersection Angle		MS	90.15°. DM Fig. 910-19 (May 2001)			
Sight Distance	N/A					
Horizontal Alignment						
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)			
			<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>
			GR 14+13	35 mph	250 feet	290 feet
Vertical Alignment						
Stopping Sight Distance		MS	DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (Oct. 2002)			
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (Oct. 2002)			
Roadside						
Fill Slopes			DM Fig. 640-6b (Feb. 2002)			
Ditch Inslopes			DM Fig. 640-6b (Feb. 2002)			
Back Slopes & Cut Slopes			DM Fig. 640-6b (Feb. 2002)			
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)			
Ramp Spacing		MS	DM Fig. 940-5 (Sept. 2002)			
			<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>	
			Broadway NB Off (FR) to 41 st St. NB On (GR)	500 feet	2800 feet	
			41 st St. NB On (GR) to Pacific NB Off (HR)	2000 feet	3700 feet	
Gore Width		MS	10+8+4=22ft DM Section 940.06(4), Fig. 940-9d (Sept. 2002)			
Gore Radius		MS	4 feet minimum. DM Section 940.06(4) and Fig. 940-11a,b (Sept. 2002)			
Acceleration Length		MS	DM Section 940.06 (4a) (Sept. 2002), Figure 940-8 (Sept. 2002).			
			<u>Ramp</u>	<u>Length Required</u>	<u>Length Provided</u>	
			GR (0-60mph)	1200 feet	1200 feet	
Deceleration Length	N/A					
Ramp/Mainline Tapers	N/A					
Enforcement Area	N/A					
Ramp Meter Storage			2 metered lanes, no HOV bypass, and approx. 950 ft storage. <i>I-5 Everett HOV Ramp Metering Meeting notes, 8/26/04.</i>			

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2

1/12/2005

Project Name I-5 Everett HOV

Ramp Design Parameters – SB On Ramp Pacific Ave. (HL Line)

This checklist is to confirm interpretation of standards.

Design Element (HL Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference									
Design Class			I-1. DM Figure 440-4 (May 2001)									
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)									
Design Speed (Posted Speed)		MS	0 mph at Sta. HL 16+50 (ramp meter). DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)									
ADT		Year 2020	"835" Peak Hourly Volume. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.									
Truck Percentage			4%. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.									
Access Control		MS	Full. DM Figure 440-4 (May 2001)									
Grade												
Maximum Grade		MS	5.2% Upgrade. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)									
Ramp												
Number of Lanes		MS	2 Lane, 1 HOV bypass lane. Based on volume determined by traffic analysis and ramp metering.									
Lane Width		MS	25 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)									
Turning Roadway Width		MS	25 feet. DM Section 640.04(2), Figure 640-8a (Feb. 2002)									
Channelization Tapers			See Lane Transitions below									
Lane Transitions		MS	300 feet (narrowing from 25 to 12 feet), 300 feet (narrowing from 24 to 12 feet). DM Section 1050.06(4)(e) and Fig. 1050-4b (May 2003)									
Max. Superelevation		MS	10%. DM Section 640.05 and Fig. 640-11a (Feb. 2002)									
<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> </tr> </thead> <tbody> <tr> <td>HL 10+00 to 13+80</td> <td>50 mph</td> <td>5%</td> </tr> <tr> <td>HL 15+45 to 20+00</td> <td>35 mph</td> <td>2%</td> </tr> </tbody> </table>				<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	HL 10+00 to 13+80	50 mph	5%	HL 15+45 to 20+00	35 mph	2%
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>										
HL 10+00 to 13+80	50 mph	5%										
HL 15+45 to 20+00	35 mph	2%										
Superelevation Transitions		MS	DM Section 640.05(4) and (5), Figure 640-14b (Feb. 2002)									
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)									
Ramp Shoulders												
Shoulder Width – Inside		MS	4 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)									
Shoulder Width - Outside		MS	8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)									

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Design Element (HL Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference			
Shoulder Cross Slopes			Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)			
Ramp Terminal Design						
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)			
Intersection Radii - Left		MS	50 ft. DM Chapter 910 and Fig. 910-19 (May 2001)			
Intersection Radii - Right		MS	50 ft. DM Chapter 910 and Fig. 910-8 (May 2001)			
Intersection Angle		MS	93.31°. DM Fig. 910-19 (May 2001)			
Sight Distance	N/A					
Horizontal Alignment						
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)			
			<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>
			HL 12+75	50 mph	425 feet	593 feet
Vertical Alignment						
Stopping Sight Distance		MS	DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (June 1999)			
			<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>
			HL 16+75	35 mph	250 feet	253 feet
			HL 19+25	30 mph	200 feet	229 feet
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (April 1998)			
Roadside						
Fill Slopes			DM Fig. 640-6b (Feb. 2002)			
Ditch Inslopes			DM Fig. 640-6b (Feb. 2002)			
Back Slopes & Cut Slopes			DM Fig. 640-6b (Feb. 2002)			
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)			
Ramp Spacing		MS	DM Fig. 940-5 (Sept. 2002)			
			<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>	
			SR2 SB On (IL) to Pacific SB On (HL)	1000 feet	1250 feet	
Gore Width		MS	10+8+4=22ft DM Section 940.06(4), Fig. 1050-4b (May. 2003)			
Gore Radius		MS	4 feet minimum. DM Section 940.06(4) and Fig. 940-9c (Sept. 2002)			

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Design Element (HL Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference		
Acceleration Length		MS	DM Section 940.06 (4a) (Sept. 2002), Figure 940-8 (Sept. 2002)		
			Ramp	Length Required	Length Provided
			HL (0-60 mph)	1200 feet	1200 feet
Gap Acceptance Length (Parallel type on-connections only)		MS	DM Section 940.06 (4b) (Sept. 2002), Fig. 940-9b, 940-9c (Sept. 2002)		
			Ramp	Length Required	Length Provided
			HL	300 feet	300 feet
Deceleration Length	N/A				
Ramp/Mainline Tapers		MS	DM Section 940.06(4)(d) and Fig. 940-9c (Sept 2002)		
			Ramp	Taper Required	Taper Provided
			HL	300 feet	300 feet
Enforcement Area		MS	12-foot wide shoulder for 200 feet. DM Section 1050.06(7), Fig. 1050-4a,b & 5a,b (May 2003)		
Ramp Meter Storage			2 metered lanes (12' and 13'), HOV bypass, approx. 800 ft storage. <i>I-5 Everett HOV Ramp Metering Meeting notes, 8/26/04.</i>		

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Ramp Design Parameters – NB Pacific Ave. Off Ramp (HR Line)

This checklist is to confirm interpretation of standards.

Design Element (HR Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference
Design Class			I-1. DM Figure 440-4 (May 2001)
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)
Design Speed (Posted Speed)		MS	45 mph at Sta. HR 10+00. DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)
ADT		Year 2020	“945” Peak Hourly Volume. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.
Truck Percentage			3%. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.
Access Control		MS	Full. DM Figure 440-4 (May 2001)
Grade			
Maximum Grade		MS	6.4%. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)
Ramp			
Number of Lanes		MS	1 Lane. Based on volume determined by traffic analysis.
Lane Width		MS	15-25 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)
Turning Roadway Width		MS	15 feet. DM Section 640.04(2), Figure 640-9a (Feb. 2002)
Channelization Tapers			See Lane Transitions below
Lane Transitions		MS	DM Section 620.07(1) (May 2004), Chapter 940 (Sept. 2002)
Max. Superelevation		MS	10%. DM Section 640.05 and Fig. 640-11a (Feb. 2002)
			<u>Location</u> <u>Design Speed</u> <u>Required</u>
			HR 10+00 to 12+70 45 mph 5%
			HR 14+66 to 16+58 35 mph 2%
			HR 17+49.94 30 mph 5%
			HR 18+41 to 19+11.707 25 mph 2%
Superelevation Transitions		MS	DM Section 640.05(4) and (5), Figure 640-14b (Feb. 2002)
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)
Ramp Shoulders			
Shoulder Width – Inside		MS	2 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)
Shoulder Width - Outside		MS	8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Design Element (HR Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference												
Shoulder Cross Slopes			Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)												
Ramp Terminal Design															
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)												
Intersection Radii - Left		MS	50 ft. DM Chapter 910 and Fig. 910-19 (May 2001)												
Intersection Radii - Right		MS	50 ft. DM Chapter 910 and Fig. 910-8 (May 2001)												
Intersection Angle		MS	90.51°. DM Fig. 910-19 (May 2001)												
Sight Distance		ENF	480 feet for 35 mph cross street design speed. DM Section 910.10 and Figure 910-6 (May 2001) HR > 480 feet (MS – to the west) and 340 feet (ENF – to the east)- Project adds signal												
Horizontal Alignment															
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)												
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> <th><u>Proposed</u></th> </tr> </thead> <tbody> <tr> <td>HR 11+57</td> <td>50 mph</td> <td>420 feet</td> <td>580 feet</td> </tr> <tr> <td>HR 17+50</td> <td>30 mph</td> <td>200 feet</td> <td>500 feet</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>	HR 11+57	50 mph	420 feet	580 feet	HR 17+50	30 mph	200 feet	500 feet
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>												
HR 11+57	50 mph	420 feet	580 feet												
HR 17+50	30 mph	200 feet	500 feet												
Vertical Alignment															
Stopping Sight Distance		MS	DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (June 1999)												
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> <th><u>Proposed</u></th> </tr> </thead> <tbody> <tr> <td>HR 13+75</td> <td>30 mph</td> <td>215 feet</td> <td>261 feet</td> </tr> <tr> <td>HR 18+25</td> <td>35 mph</td> <td>280 feet</td> <td>345 feet</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>	HR 13+75	30 mph	215 feet	261 feet	HR 18+25	35 mph	280 feet	345 feet
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>												
HR 13+75	30 mph	215 feet	261 feet												
HR 18+25	35 mph	280 feet	345 feet												
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (April 1998)												
Roadside															
Fill Slopes			DM Fig. 640-6b (Feb. 2002)												
Ditch Inslopes			DM Fig. 640-6b (Feb. 2002)												
Back Slopes & Cut Slopes			DM Fig. 640-6b (Feb. 2002)												
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)												
Ramp Spacing		MS	DM Fig. 940-5 (Sept. 2002)												
			<table> <thead> <tr> <th><u>Spacing Type</u></th> <th><u>Spacing Req'd</u></th> <th><u>Spacing Provided</u></th> </tr> </thead> <tbody> <tr> <td>Pacific NB Off (HR) to SR2 NB Off (IR)</td> <td>1000 feet</td> <td>1400 feet</td> </tr> </tbody> </table>	<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>	Pacific NB Off (HR) to SR2 NB Off (IR)	1000 feet	1400 feet						
<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>													
Pacific NB Off (HR) to SR2 NB Off (IR)	1000 feet	1400 feet													

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2

1/12/2005

Project Name I-5 Everett HOV

Design Element (HR Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference				
Gore Width		MS	For off connections per DM Section 940.06(5b) (Sept. 2002) and Fig. 940-11 (Sept. 2002) Reserve Area Length for 70mph Design Speed = 55 ft				
			Reserve Area <u>Ramp</u> <u>Length Provided</u>	Required Gore Width at Physical Nose	Provided Gore Width at Physical Nose		
			HR 190 feet	12+4=16 feet	16 feet		
Gore Radius		MS	4 feet minimum. DM Section 940.06(5b) and Fig. 940-11a,b (Sept. 2002)				
Acceleration Length	N/A						
Gap Acceptance Length (Parallel type on-connections only)	N/A						
Deceleration Length		MS	DM Section 940.06 (5a) (Sept. 2002), Figure 940-10 (Sept. 2002)				
			Length Required <u>Ramp</u> <u>Length Provided</u>				
			HR (70-45mph) 390 feet	390 feet			
Ramp/Mainline Tapers		MS	1:15 DM Chapter 940.06(5)(c) and Fig. 940-12a (Sept. 2002)				
Enforcement Area	N/A						
Ramp Meter Storage	N/A						

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Ramp Design Parameters – US2 W to SB On Ramp (**IL Line**)

This checklist is to confirm interpretation of standards.

Design Element (IL Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference
Design Class			I-1. DM Figure 440-4 (May 2001)
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)
Design Speed (Posted Speed)		MS	0 mph at Sta. IL 15+50 (ramp meter). DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)
ADT		Year 2020	“1735” Peak Hourly Volume. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.
Truck Percentage			
Access Control		MS	Full. DM Figure 440-4 (May 2001)
Grade			
Maximum Grade		MS	4.4% Upgrade. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)
Ramp			
Number of Lanes		MS	1 Lane. Based on volume determined by traffic analysis.
Lane Width		MS	15 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)
Turning Roadway Width		MS	15 feet. DM Section 640.04(2), Figure 640-9a (Feb. 2002)
Channelization Tapers			See Lane Transitions below
Lane Transitions		MS	1:50 (narrowing from 15-12 feet). Add-lane. Section 940.06(4)(c) and Fig. 940-9a (Sept. 2002)
Max. Superelevation		MS	10%. DM Section 640.05 (Feb. 2002) and Fig. 640-11a (Feb. 2002)
			<u>Location</u> <u>Design Speed</u> <u>Required</u>
			IL 18+08 40 mph 7%
			IL 22+64 35 mph 10%
			IL 25+06 35 mph 7% Matches existing
Superelevation Transitions		MS	DM Section 640.05(4) and (5) and Figure 640-14b (Feb. 2002)
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)
Ramp Shoulders			
Shoulder Width – Inside		MS	4-8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)
Shoulder Width - Outside		MS	8-4 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)
Shoulder Cross Slopes			Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Design Element (IL Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference												
Ramp Terminal Design															
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)												
Intersection Radii - Left		MS	50 ft. DM Chapter 910 and Fig. 910-19 (May 2001)												
Intersection Radii - Right		MS	50 ft. DM Chapter 910 and Fig. 910-8 (May 2001)												
Intersection Angle	N/A														
Sight Distance	N/A														
Horizontal Alignment															
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)												
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> <th><u>Proposed</u></th> </tr> </thead> <tbody> <tr> <td>IL 22+06</td> <td>35 mph</td> <td>250 feet</td> <td>260 feet</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>	IL 22+06	35 mph	250 feet	260 feet				
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>												
IL 22+06	35 mph	250 feet	260 feet												
Vertical Alignment															
Stopping Sight Distance		MS	DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (June 1999)												
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> <th><u>Proposed</u></th> </tr> </thead> <tbody> <tr> <td>IL 17+00</td> <td>40 mph</td> <td>305 feet</td> <td>316 feet</td> </tr> <tr> <td>IL 23+25</td> <td>35 mph</td> <td>250 feet</td> <td>671 feet</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>	IL 17+00	40 mph	305 feet	316 feet	IL 23+25	35 mph	250 feet	671 feet
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>												
IL 17+00	40 mph	305 feet	316 feet												
IL 23+25	35 mph	250 feet	671 feet												
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (April 1998)												
Roadside															
Fill Slopes			DM Fig. 640-6b (Feb. 2002)												
Ditch Inslopes			DM Fig. 640-6b (Feb. 2002)												
Back Slopes & Cut Slopes			DM Fig. 640-6b (Feb. 2002)												
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)												
Ramp Spacing		MS	DM Fig. 940-5 (Sept. 2002)												
			<table> <thead> <tr> <th><u>Spacing Type</u></th> <th><u>Spacing Req'd</u></th> <th><u>Spacing Provided</u></th> </tr> </thead> <tbody> <tr> <td>SR2 SB On (IL) to Pacific SB On (HL)</td> <td>1000 feet</td> <td>1250 feet</td> </tr> </tbody> </table>	<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>	SR2 SB On (IL) to Pacific SB On (HL)	1000 feet	1250 feet						
<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>													
SR2 SB On (IL) to Pacific SB On (HL)	1000 feet	1250 feet													
Gore Width		MS	10+8+4=22ft DM Section 940.06(4), Fig. 940-9b (Sept. 2002)												
Gore Radius		MS	4 feet minimum. DM Section 940.06(5b) and Fig. 940-11a,b (Sept. 2002)												
Acceleration Length		MS	DM Section 940.06 (4a) (Sept. 2002), Figure 940-8 (Sept. 2002)												
			<table> <thead> <tr> <th><u>Ramp</u></th> <th><u>Length Required</u></th> <th><u>Length Provided</u></th> </tr> </thead> <tbody> <tr> <td>IL (0-60 mph)</td> <td>1200 feet</td> <td>1200 feet</td> </tr> </tbody> </table>	<u>Ramp</u>	<u>Length Required</u>	<u>Length Provided</u>	IL (0-60 mph)	1200 feet	1200 feet						
<u>Ramp</u>	<u>Length Required</u>	<u>Length Provided</u>													
IL (0-60 mph)	1200 feet	1200 feet													

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Project Name I-5 Everett HOV

Design Element (IL Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference
Gap Acceptance Length (Parallel type on-connections only)		MS	DM Section 940.06 (4b) (Sept. 2002), Fig. 940-9b, 940-9c (Sept. 2002)
Deceleration Length		MS	DM Section 940.06 (5a) (Sept. 2002), Figure 940-10 (Sept. 2002) and HOV Direct Access Design Guide Fig. 5-6 (April 1998), mainline at 70 mph:
Ramp/Mainline Tapers	N/A		
Enforcement Area	N/A		
Ramp Meter Storage			1 metered lane, no HOV bypass, and approx. 640 ft storage. <i>I-5 Everett HOV Ramp Metering Meeting notes, 8/26/04.</i>

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Ramp Design Parameters – NB to US2 E On Ramp (IR Line)

This checklist is to confirm interpretation of standards.

Design Element (IR Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference												
Design Class			I-1. DM Figure 440-4 (May 2001)												
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)												
Design Speed (Posted Speed)		MS	45 mph at STA. IR 15+85. DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)												
ADT		Year 2020	“2000” Peak Hourly Volume. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.												
Truck Percentage															
Access Control		MS	Full. DM Figure 440-4 (May 2001)												
Grade															
Maximum Grade		MS	6.5% Downgrade. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)												
Ramp															
Number of Lanes		MS	1 Lane. Based on volume determined by traffic analysis.												
Lane Width		MS	15 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)												
Turning Roadway Width		MS	15 feet. DM Section 640.04(2), Figure 640-9a (Feb. 2002)												
Channelization Tapers			See Lane Transitions below												
Lane Transitions	N/A														
Max. Superelevation		MS	10%. DM Section 640.05 (Feb. 2002) and Fig. 640-11a (Feb. 2002) <table> <thead> <tr> <th>Location</th> <th>Design Speed</th> <th>Required</th> </tr> </thead> <tbody> <tr> <td>IR 15+01</td> <td>45 mph</td> <td>5%</td> </tr> <tr> <td>IR 17+50 to 18+35</td> <td>40 mph</td> <td>2%</td> </tr> <tr> <td>IR 21+76</td> <td>35 mph</td> <td>10%</td> </tr> </tbody> </table>	Location	Design Speed	Required	IR 15+01	45 mph	5%	IR 17+50 to 18+35	40 mph	2%	IR 21+76	35 mph	10%
Location	Design Speed	Required													
IR 15+01	45 mph	5%													
IR 17+50 to 18+35	40 mph	2%													
IR 21+76	35 mph	10%													
Superelevation Transitions		MS	DM Section 640.05(4) and (5), Figure 640-14b (Feb. 2002)												
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)												
Ramp Shoulders															
Shoulder Width – Inside		MS	4 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)												
Shoulder Width - Outside		MS	8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)												
Shoulder Cross Slopes			Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)												

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Design Element (IR Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference			
Ramp Terminal Design						
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)			
Intersection Radii - Left		MS	50 ft. DM Chapter 910 and Fig. 910-19 (May 2001)			
Intersection Radii - Right		MS	50 ft. DM Chapter 910 and Fig. 910-8 (May 2001)			
Intersection Angle	N/A					
Sight Distance	N/A		480 feet for 35 mph cross street design speed. DM Section 910.10 and Figure 910-6 (May 2001)			
Horizontal Alignment						
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)			
			<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>
			IR 15+00	45 mph	360 feet	490 feet
			IR 21+76	30 mph	200 feet	205 feet
Vertical Alignment						
Stopping Sight Distance			DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (June 1999) <i>See Evaluate Upgrade No.2.</i>			
		PN	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>
		PN	IR 15+85	45 mph	360 feet	Sag Curve Requires Illumination
		MS	IR 18+85	35 mph	250 feet	250 feet
		PN	IR 22+55	35 mph	250 feet	Sag Curve Requires Illumination
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (April 1998)			
Roadside						
Fill Slopes			DM Fig. 640-6b (Feb. 2002)			
Ditch Inslopes			DM Fig. 640-6b (Feb. 2002)			
Back Slopes & Cut Slopes			DM Fig. 640-6b (Feb. 2002)			
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)			
Ramp Spacing		MS	DM Fig. 940-5 (Sept. 2002)			
			<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>	
			Pacific NB Off (HR) to SR2 NB Off (IR)	1000 feet	1400 feet	
			SR2 NB Off (IR) to SR2 NB On (JR1)	500 feet	1750 feet	

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Design Element (IR Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference		
Gore Width		MS	For off connections per DM Section 940.06(5b) (Sept. 2002) and Fig. 940-11 (Sept. 2002) Reserve Area Length for 70mph Design Speed = 55 ft		
			Reserve Area <u>Ramp</u> <u>Length Provided</u>	Required Gore Width at Physical Nose	Provided Gore Width at Physical Nose
			IR 140 feet	12+4+4=20 feet	21 feet
Gore Radius		MS	4 feet minimum. DM Section 940.06(5b) and Fig. 940-11a,b (Sept. 2002)		
Acceleration Length	N/A				
Gap Acceptance Length (Parallel type on-connections only)		MS	DM Section 940.06 (4b) (Sept. 2002), Fig. 940-9b, 940-9c (Sept. 2002)		
Deceleration Length		MS	DM Section 940.06 (5a) (Sept. 2002), Figure 940-10 (Sept. 2002), mainline at 70 mph: <u>Ramp</u> <u>Length Required</u> <u>Length Provided</u>		
			IR (70-45mph) 390 feet	550 feet	
Ramp/Mainline Tapers		MS	1:15 DM Chapter 940.06 (5)(d), Fig. 940-12c (Sept. 2002)		
Enforcement Area	N/A				
Ramp Meter Storage	N/A				

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Ramp Design Parameters – SB Everett Ave. Off Ramp (JL1 Line)

This checklist is to confirm interpretation of standards.

Design Element (JL1 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference												
Design Class			I-1. DM Figure 440-4 (May 2001)												
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)												
Design Speed (Posted Speed)		MS	35 mph at STA JL1 17+84. DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)												
ADT															
Truck Percentage															
Access Control		MS	Full. DM Figure 440-4 (May 2001)												
Grade															
Maximum Grade		MS	3.4% Downgrade. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)												
Ramp															
Number of Lanes		MS	1 Lane. Based on volume determined by traffic analysis.												
Lane Width		MS	15 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)												
Turning Roadway Width		MS	15 feet. DM Section 640.04(2), Figure 640-9a (Feb. 2002)												
Channelization Tapers		MS	See Lane Transitions below												
Lane Transitions	N/A														
Max. Superelevation		MS	10%. DM Section 640.05 (Feb. 2002) and Fig. 640-11a (Feb. 2002)												
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> </tr> </thead> <tbody> <tr> <td>JL1 11+43</td> <td>25 mph</td> <td>2%</td> </tr> <tr> <td>JL1 15+35</td> <td>35 mph</td> <td>4%</td> </tr> <tr> <td>JL1 16+80 to 17+84.74</td> <td>35 mph</td> <td>2%</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	JL1 11+43	25 mph	2%	JL1 15+35	35 mph	4%	JL1 16+80 to 17+84.74	35 mph	2%
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>													
JL1 11+43	25 mph	2%													
JL1 15+35	35 mph	4%													
JL1 16+80 to 17+84.74	35 mph	2%													
Superelevation Transitions		MS	DM Section 640.05(4) and (5), Figure 640-14b (Feb. 2002)												
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)												
Ramp Shoulders															
Shoulder Width – Inside		MS	4 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)												
Shoulder Width - Outside		MS	8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)												
Shoulder Cross Slopes		MS	Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)												
Ramp Terminal Design															

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Project Name I-5 Everett HOV

Design Element (JL1 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference								
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)								
Intersection Radii - Left		MS	50 ft. DM Chapter 910 and Fig. 910-19 (May 2001)								
Intersection Radii – Right		MS	50 ft. DM Chapter 910 and Fig. 910-8 (May 2001)								
Intersection Angle		MS	88.89°. DM Fig. 910-19 (May 2001)								
Sight Distance		MS	DM Section 910.10 and Figure 910-6 (May 2001) JL1 > 1540 feet (MS – to the east) and >790 feet (MS – to the west)								
Horizontal Alignment											
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)								
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> <th><u>Proposed</u></th> </tr> </thead> <tbody> <tr> <td>JL1 12+56</td> <td>35 mph</td> <td>250 feet</td> <td>360 feet</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>	JL1 12+56	35 mph	250 feet	360 feet
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>								
JL1 12+56	35 mph	250 feet	360 feet								
Vertical Alignment											
Stopping Sight Distance		MS	DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (June 1999)								
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> <th><u>Proposed</u></th> </tr> </thead> <tbody> <tr> <td>JL1 15+00</td> <td>35 mph</td> <td>250 feet</td> <td>278 feet</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>	JL1 15+00	35 mph	250 feet	278 feet
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>								
JL1 15+00	35 mph	250 feet	278 feet								
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (April 1998)								
Roadside											
Fill Slopes			DM Fig. 640-6b (Feb. 2002)								
Ditch Inslopes			DM Fig. 640-6b (Feb. 2002)								
Back Slopes & Cut Slopes			DM Fig. 640-6b (Feb. 2002)								
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)								
Ramp Spacing		MS	DM Fig. 940-5 (Sept. 2002)								
			<table> <thead> <tr> <th><u>Spacing Type</u></th> <th><u>Spacing Req'd</u></th> <th><u>Spacing Provided</u></th> </tr> </thead> <tbody> <tr> <td>SR2 SB Off (JL2) to Everett Ave SB Off (JL1)</td> <td>500 feet</td> <td>500 feet</td> </tr> </tbody> </table>	<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>	SR2 SB Off (JL2) to Everett Ave SB Off (JL1)	500 feet	500 feet		
<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>									
SR2 SB Off (JL2) to Everett Ave SB Off (JL1)	500 feet	500 feet									
Gore Width		MS	For off connections per DM Section 940.06(5b) (Sept. 2002) and Fig. 940-11 (Sept. 2002) Reserve Area Length for 70mph Design Speed = 55 ft Reserve Area Length for 45mph Design Speed = 30 ft								
			<table> <thead> <tr> <th><u>Ramp</u></th> <th><u>Reserve Area Length Provided</u></th> <th><u>Required Gore Width at Physical Nose</u></th> <th><u>Provided Gore Width at Physical Nose</u></th> </tr> </thead> <tbody> <tr> <td>JL1</td> <td>40 feet</td> <td>12 feet</td> <td>13 feet</td> </tr> </tbody> </table>	<u>Ramp</u>	<u>Reserve Area Length Provided</u>	<u>Required Gore Width at Physical Nose</u>	<u>Provided Gore Width at Physical Nose</u>	JL1	40 feet	12 feet	13 feet
<u>Ramp</u>	<u>Reserve Area Length Provided</u>	<u>Required Gore Width at Physical Nose</u>	<u>Provided Gore Width at Physical Nose</u>								
JL1	40 feet	12 feet	13 feet								
Gore Radius		MS	4 feet. DM Section 940.06(5b) and Fig. 940-11a,b (Sept. 2002)								

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2

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Project Name I-5 Everett HOV

Design Element (JL1 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference						
Acceleration Length	N/A								
Gap Acceptance Length (Parallel type on-connections only)	N/A								
Deceleration Length		MS	DM Section 940.06 (5a) (Sept. 2002), Figure 940-10 (Sept. 2002) <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; width: 33%;">Ramp</th> <th style="text-align: center; width: 33%;">Length Required</th> <th style="text-align: center; width: 33%;">Length Provided</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">JL1 (50-35mph)</td> <td style="text-align: center;">285 feet</td> <td style="text-align: center;">285 feet</td> </tr> </tbody> </table>	Ramp	Length Required	Length Provided	JL1 (50-35mph)	285 feet	285 feet
Ramp	Length Required	Length Provided							
JL1 (50-35mph)	285 feet	285 feet							
Ramp/Mainline Tapers		MS	1:10 DM Section 940.06 (6) and Figure 940-13b (Sept. 2002)						
Enforcement Area	N/A								
Ramp Meter Storage	N/A								

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Ramp Design Parameters – SB to US2 E On Ramp (JL2 Line)

This checklist is to confirm interpretation of standards.

Design Element (JL2 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference									
Design Class			I-1. DM Figure 440-4 (May 2001)									
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)									
Design Speed (Posted Speed)		MS	55 mph at STA JL2 20+06. DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)									
ADT		Year 2020	“1900” Peak Hourly Volume. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.									
Truck Percentage												
Access Control		MS	Full. DM Figure 440-4 (May 2001)									
Grade												
Maximum Grade		MS	5.1% Downgrade. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)									
Ramp												
Number of Lanes		MS	1 Lane. Based on volume determined by traffic analysis.									
Lane Width		MS	15 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)									
Turning Roadway Width		MS	15 feet. DM Section 640.04(2), Figure 640-9a (Feb. 2002)									
Channelization Tapers		MS	See Lane Transitions below									
Lane Transitions	N/A											
Max. Superelevation		MS	10%. DM Section 640.05 (Feb. 2002) and Fig. 640-11a (Feb. 2002)									
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> </tr> </thead> <tbody> <tr> <td>JL2 12+30 to 17+70</td> <td>35 mph</td> <td>2%</td> </tr> <tr> <td>JL2 19+96</td> <td>55 mph</td> <td>7%</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	JL2 12+30 to 17+70	35 mph	2%	JL2 19+96	55 mph	7%
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>										
JL2 12+30 to 17+70	35 mph	2%										
JL2 19+96	55 mph	7%										
Superelevation Transitions		MS	DM Section 640.05(4) and (5), Figure 640-14b (Feb. 2002)									
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)									
Ramp Shoulders												
Shoulder Width – Inside		MS	4 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)									
Shoulder Width - Outside		MS	8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)									
Shoulder Cross Slopes		MS	Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)									
Ramp Terminal Design												
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)									

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Design Element (JL2 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference			
Intersection Radii - Left		MS	50 ft. DM Chapter 910 and Fig. 910-19 (May 2001)			
Intersection Radii – Right		MS	50 ft. DM Chapter 910 and Fig. 910-8 (May 2001)			
Intersection Angle	N/A					
Sight Distance	N/A					
Horizontal Alignment						
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)			
			<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>
			JL2	14+43	40 mph	305 feet
				JL2	19+96	55 mph
					495 feet	550 feet
Vertical Alignment						
Stopping Sight Distance		MS	DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (June 1999)			
			<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>
			JL2	15+40	45 mph	360 feet
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (April 1998)			
Roadside						
Fill Slopes			DM Fig. 640-6b (Feb. 2002)			
Ditch Inslopes			DM Fig. 640-6b (Feb. 2002)			
Back Slopes & Cut Slopes			DM Fig. 640-6b (Feb. 2002)			
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)			
Ramp Spacing		MS	DM Fig. 940-5 (Sept. 2002)			
			<u>Spacing Type</u>	<u>Spacing Req'd</u>		<u>Spacing Provided</u>
			Marine View SB On (KL) to SR2 SB Off (JL2)	2000 feet	2780 feet	
			SR2 SB Off (JL2) to Everett Ave SB Off (JL1)	500 feet	500 feet	
			SR2 SB Off (JL2) to SR2 SB On (IL)	500 feet	2250 feet	
Gore Width		MS	For off connections per DM Section 940.06(5b) (Sept. 2002) and Fig. 940-11 (Sept. 2002)			
			Reserve Area Length for 70mph Design Speed = 55 ft			
			Reserve Area Length for 45mph Design Speed = 30 ft			
			<u>Reserve Area</u>	<u>Required Gore Width</u>	<u>Provided Gore Width</u>	
			<u>Ramp</u>	<u>Length Provided</u>	<u>at Physical Nose</u>	<u>at Physical Nose</u>
			JL2	88 feet	12+4+4=20 feet	24 feet
Gore Radius		MS	4 feet minimum. DM Section 940.06(5b) and Fig. 940-11a,b (Sept. 2002)			

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Design Element (JL2 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference		
Acceleration Length		MS	DM Section 940.06 (4a) (Sept. 2002), Figure 940-8 (Sept. 2002)		
Gap Acceptance Length (Parallel type on-connections only)	N/A				
Deceleration Length		MS	DM Section 940.06 (5a) (Sept. 2002), Figure 940-10 (Sept. 2002), mainline at 70 mph: Ramp	Length Required	Length Provided
Ramp/Mainline Tapers		MS	JL2 (70-55 mph)	290feet	417 feet
Enforcement Area	N/A		1:10 DM Chapter 940 (Sept. 2002)		
Ramp Meter Storage	N/A				

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Ramp Design Parameters – US2 W to NB On Ramp (JR1 Line)

This checklist is to confirm interpretation of standards.

Design Element (JR1 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference
Design Class			I-1. DM Figure 440-4 (May 2001)
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)
Design Speed (Posted Speed)		MS	0 mph at Sta. JR1 21+50 (ramp meter). DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)
ADT		Year 2020	“1655” Peak Hourly Volume. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.
Truck Percentage			
Access Control		MS	Full. DM Figure 440-4 (May 2001)
Grade			
Maximum Grade		MS	1%. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)
Ramp			
Number of Lanes		MS	1 Lane. Based on volume determined by traffic analysis.
Lane Width		MS	15 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)
Turning Roadway Width		MS	15 feet. DM Section 640.04(2), Figure 640-9a (Feb. 2002)
Channelization Tapers			See Lane Transitions below
Lane Transitions		MS	1:25 DM Section 620.07(1) (May 2004), Chapter 940 (Sept. 2002)
Max. Superelevation		MS	10%. DM Section 640.05 (Feb. 2002) and Fig. 640-11a (Feb. 2002)
			<u>Location</u> <u>Design Speed</u> <u>Required</u>
			JR1 15+00 30 mph 10% Matches Existing
			JR1 20+87 50 mph 7%
Superelevation Transitions		MS	DM Section 640.05(4) and (5), Figure 640-14b (Feb. 2002)
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)
Ramp Shoulders			
Shoulder Width – Inside		MS	4 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)
Shoulder Width - Outside		MS	8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)
Shoulder Cross Slopes			Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)
Ramp Terminal Design			

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Project Name I-5 Everett HOV

Design Element (JR1 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference					
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)					
Intersection Radii - Left		MS	50 ft. DM Chapter 910 and Fig. 910-19 (May 2001)					
Intersection Radii - Right		MS	50 ft. DM Chapter 910 and Fig. 910-8 (May 2001)					
Intersection Angle	N/A							
Sight Distance	N/A							
Horizontal Alignment								
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)					
			<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>		
			JR1	15+00	30 mph	200 feet		
			JR1	20+86	50 mph	425 feet		
						460 feet		
Vertical Alignment								
Stopping Sight Distance		MS	DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (June 1999)					
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (April 1998)					
Roadside								
Fill Slopes			DM Fig. 640-6b (Feb. 2002)					
Ditch Inslopes			DM Fig. 640-6b (Feb. 2002)					
Back Slopes & Cut Slopes			DM Fig. 640-6b (Feb. 2002)					
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)					
Ramp Spacing		MS	DM Fig. 940-5 (Sept. 2002)					
			<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>			
			SR2 NB Off (IR) to SR2 NB On (JR1)	500 feet	1750 feet			
Gore Width		MS	10+8+4=22ft DM Section 940.06(4), Fig. 940-9A (Sept. 2002)					
Gore Radius		MS	4 feet minimum. DM Section 940.06(5b) and Fig. 940-11a,b (Sept. 2002)					
Acceleration Length		MS	DM Section 940.06 (4a) (Sept. 2002), Figure 940-8 (Sept. 2002)					
			<u>Ramp</u>	<u>Length Required</u>	<u>Length Provided</u>			
			JR1 (0-60 mph)	1200 feet	1200 feet			
Gap Acceptance Length (Parallel type on-connections only)		MS	DM Section 940.06 (4b) (Sept. 2002), Fig. 940-9b, 940-9c (Sept. 2002)					
			<u>Ramp</u>	<u>Length Required</u>	<u>Length Provided</u>			
			JR1	300 feet	300 feet			
Deceleration Length	N/A							

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Project Name I-5 Everett HOV

Design Element (JR1 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference
Ramp/Mainline Tapers		MS	DM Section 940.06(4)(b) and (6), Fig. 940-9b and 940-13c (Sept. 2002)
Enforcement Area	N/A		
Ramp Meter Storage			1 metered lane, no HOV bypass, approx. 450 ft storage. <i>I-5 Everett HOV Ramp Metering Meeting notes, 8/26/04.</i>

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Ramp Design Parameters – Everett Ave. NB On Ramp (JR2 Line)

This checklist is to confirm interpretation of standards.

Design Element (JR2 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference									
Design Class			I-1. DM Figure 440-4 (May 2001)									
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)									
Design Speed (Posted Speed)		MS	0 mph at Sta. JR2 14+00 (ramp meter). DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)									
ADT												
Truck Percentage												
Access Control		MS	Full. DM Figure 440-4 (May 2001)									
Grade												
Maximum Grade		MS	6%. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)									
Ramp												
Number of Lanes		MS	2 Lanes. Based on volume determined by traffic analysis and ramp metering.									
Lane Width		MS	25 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)									
Turning Roadway Width		MS	15 feet. DM Section 640.04(2), Figure 640-8a (Feb. 2002)									
Channelization Tapers			See Lane Transitions below									
Lane Transitions		MS	1:60 (narrowing from 25' to 15') DM Section 620.07(1) (May 2004), Chapter 940 (Sept. 2002)									
Max. Superelevation		MS	10%. DM Section 640.05 (Feb. 2002) and Fig. 640-11a and 12 (Feb. 2002)									
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> </tr> </thead> <tbody> <tr> <td>JR2 10+68</td> <td>20 mph</td> <td>2%</td> </tr> <tr> <td>JR2 15+00</td> <td>40 mph</td> <td>2%</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	JR2 10+68	20 mph	2%	JR2 15+00	40 mph	2%
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>										
JR2 10+68	20 mph	2%										
JR2 15+00	40 mph	2%										
Superelevation Transitions		MS	DM Section 640.05(4) and (5), Figure 640-14b (Feb. 2002)									
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)									
Ramp Shoulders												
Shoulder Width – Inside		MS	4 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)									
Shoulder Width - Outside		MS	8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)									
Shoulder Cross Slopes			Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)									
Ramp Terminal Design												
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)									

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Design Element (JR2 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference			
Intersection Radii - Left		MS	50 ft. DM Chapter 910 and Fig. 910-19 (May 2001)			
Intersection Radii - Right		MS	50 ft. DM Chapter 910 and Fig. 910-8 (May 2001)			
Intersection Angle		MS	90.69°. DM Fig. 910-19 (May 2001)			
Sight Distance	N/A					
Horizontal Alignment						
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)			
			<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>
			JR2	17+07	50 mph	425 feet
						490 feet
Vertical Alignment						
Stopping Sight Distance		MS	DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (June 1999)			
			<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>
			JR2	10+75	30 mph	180 feet
						203 feet
			JR2	14+60	45 mph	302 feet
						338 feet
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (April 1998)			
Roadside						
Fill Slopes			DM Fig. 640-6b (Feb. 2002)			
Ditch Inslopes			DM Fig. 640-6b (Feb. 2002)			
Back Slopes & Cut Slopes			DM Fig. 640-6b (Feb. 2002)			
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)			
Ramp Spacing		MS	DM Fig. 940-5 (Sept. 2002)			
Gore Width		MS	10+8+4=22ft DM Section 940.06(4), Fig. 940-9d (Sept. 2002)			
Gore Radius		MS	4 feet minimum. DM Section 940.06(5b) and Fig. 940-11a,b (Sept. 2002)			
Acceleration Length		MS	DM Section 940.06 (4a) (Sept. 2002), Figure 940-8 (Sept. 2002)			
			<u>Ramp</u>	<u>Length Required</u>	<u>Length Provided</u>	
			JR2 (0-60 mph)	1330 feet	1400 feet	
Gap Acceptance Length (Parallel type on-connections only)	N/A					
Deceleration Length	N/A					
Ramp/Mainline Tapers		MS	1:50 DM Chapter 940 (Sept. 2002)			
Enforcement Area	N/A					

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Design Element (JR2 Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference
Ramp Meter Storage			2 metered lanes, no HOV bypass, approx. 800 ft storage. <i>I-5 Everett HOV Ramp Metering Meeting notes, 8/26/04.</i>

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Ramp Design Parameters - SB Marine View Dr. On Ramp (KL Line)

This checklist is to confirm interpretation of standards.

Design Element (KL Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference												
Design Class			I-1. DM Figure 440-4 (May 2001)												
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)												
Design Speed (Posted Speed)		MS	0 mph at Sta. KL 19+00 (ramp meter). DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)												
ADT		Year 2020	"830" Peak Hourly Volume. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.												
Truck Percentage															
Access Control		MS	Full. DM Figure 440-4 (May 2001)												
Grade															
Maximum Grade		MS	6.0% Upgrade. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)												
Ramp															
Number of Lanes		MS	1 Lane, 1 HOV bypass lane. Based on volume determined by traffic analysis and ramp metering.												
Lane Width		MS	25 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)												
Turning Roadway Width		MS	24 feet. DM Section 640.04(2), Figure 640-8a (Feb. 2002)												
Channelization Tapers		MS	See Lane Transitions below												
Lane Transitions		MS	300' transition (Narrowing from 25-15'), 1:50 (Narrowing from 15-12'). Section 1050.06 (4)(e) and Fig. 1050-4a (May 2003)												
Max. Superelevation		MS	10%. DM Section 640.05 (Feb. 2002) and Fig. 640-11a (Feb. 2002)												
<table> <thead> <tr> <th>Location</th> <th>Design Speed</th> <th>Required</th> </tr> </thead> <tbody> <tr> <td>KL 15+39</td> <td>45 mph</td> <td>9%</td> </tr> <tr> <td>KL 17+40 to 21+00</td> <td>35 mph</td> <td>2%</td> </tr> <tr> <td>KL 21+00 to 25+00</td> <td>25 mph</td> <td>2%</td> </tr> </tbody> </table>				Location	Design Speed	Required	KL 15+39	45 mph	9%	KL 17+40 to 21+00	35 mph	2%	KL 21+00 to 25+00	25 mph	2%
Location	Design Speed	Required													
KL 15+39	45 mph	9%													
KL 17+40 to 21+00	35 mph	2%													
KL 21+00 to 25+00	25 mph	2%													
Superelevation Transitions		MS	DM Section 640.05(4) and (5), Figure 640-14b (Feb. 2002)												
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)												
Ramp Shoulders															
Shoulder Width – Inside		MS	4 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)												
Shoulder Width - Outside		MS	8-10 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)												

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Design Element (KL Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference												
Shoulder Cross Slopes		MS	Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)												
Ramp Terminal Design															
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)												
Intersection Radii - Left		MS	50 ft. DM Chapter 910 and Fig. 910-19 (May 2001)												
Intersection Radii – Right		MS	50 ft. DM Chapter 910 and Fig. 910-8 (May 2001)												
Intersection Angle		MS	80.97°. DM Fig. 910-19 (May 2001)												
Sight Distance	N/A														
Horizontal Alignment															
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)												
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> <th><u>Proposed</u></th> </tr> </thead> <tbody> <tr> <td>KL 15+39</td> <td>45 mph</td> <td>360 feet</td> <td>700 feet</td> </tr> <tr> <td>KL 24+04</td> <td>25 mph</td> <td>155 feet</td> <td>685 feet</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>	KL 15+39	45 mph	360 feet	700 feet	KL 24+04	25 mph	155 feet	685 feet
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>												
KL 15+39	45 mph	360 feet	700 feet												
KL 24+04	25 mph	155 feet	685 feet												
Vertical Alignment															
Stopping Sight Distance		MS	DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (June 1999)												
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> <th><u>Proposed</u></th> </tr> </thead> <tbody> <tr> <td>KL 18+22.5</td> <td>35 mph</td> <td>250 feet</td> <td>260 feet</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>	KL 18+22.5	35 mph	250 feet	260 feet				
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	<u>Proposed</u>												
KL 18+22.5	35 mph	250 feet	260 feet												
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (April 1998)												
Roadside															
Fill Slopes			DM Fig. 640-6b (Feb. 2002)												
Ditch Inslopes			DM Fig. 640-6b (Feb. 2002)												
Back Slopes & Cut Slopes			DM Fig. 640-6b (Feb. 2002)												
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)												
Ramp Spacing		MS	DM Fig. 940-5 (Sept. 2002)												
			<table> <thead> <tr> <th><u>Spacing Type</u></th> <th><u>Spacing Req'd</u></th> <th><u>Spacing Provided</u></th> </tr> </thead> <tbody> <tr> <td>Marine View SB On (KL) to SR2 SB Off (JL2)</td> <td>2000 feet</td> <td>2780 feet</td> </tr> </tbody> </table>	<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>	Marine View SB On (KL) to SR2 SB Off (JL2)	2000 feet	2780 feet						
<u>Spacing Type</u>	<u>Spacing Req'd</u>	<u>Spacing Provided</u>													
Marine View SB On (KL) to SR2 SB Off (JL2)	2000 feet	2780 feet													
Gore Width		MS	10+8+4=22ft DM Section 940.06(4), Fig. 1050-4a (Sept. 2002)												
Gore Radius		MS	4 feet minimum. DM Section 940.06(5b) and Fig. 940-11a,b (Sept. 2002)												

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Project Name I-5 Everett HOV

Design Element (KL Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference		
Acceleration Length		MS	DM Section 940.06 (4a) (Sept. 2002), Figure 940-8 (Sept. 2002)		
			Ramp	Length Required	Length Provided
			KL (0-60mph)	1200 feet	1200 feet
Gap Acceptance Length (Parallel type on-connections only)	N/A				
Deceleration Length	N/A				
Ramp/Mainline Tapers	N/A				
Enforcement Area		MS	14-foot wide shoulder for 200 feet. DM Section 1050.06(7), Figure 1050-4a & 4b		
Ramp Meter Storage			1 metered lane, HOV bypass, and approx. 400 ft storage. <i>I-5 Everett HOV Ramp Metering Meeting notes, 8/26/04.</i>		

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005

Project Name I-5 Everett HOV

Ramp Design Parameters – NB Marine View Dr. Off Ramp (KR Line)

This checklist is to confirm interpretation of standards.

Design Element (KR Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference									
Design Class			I-1. DM Figure 440-4 (May 2001)									
Design Year			Year 2020 (Note: Based on FHWA approval See Issue Paper #1 in Traffic Analysis)									
Design Speed (Posted Speed)		MS	50 mph at Sta. KR 10+10. DM Section 940.05(1) (Sept. 2002) DM Section 940.05(1) and Figure 940-1 (Sept. 2002)									
ADT		Year 2020	"920" Peak Hourly Volume. <i>Transportation Technical Report, Interstate 5 HOV, SR526 to SR2 Vicinity</i> . Parsons Brinckerhoff, 2003.									
Truck Percentage												
Access Control		MS	Full. DM Figure 440-4 (May 2001)									
Grade												
Maximum Grade		MS	3.9% Downgrade. DM Section 940.05(3) and Figure 940-2 (Sept. 2002)									
Ramp												
Number of Lanes		MS	1 Lane. Based on volume determined by traffic analysis.									
Lane Width		MS	15 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)									
Turning Roadway Width		MS	15 feet. DM Section 640.04(2), Figure 640-9a (Feb. 2002)									
Channelization Tapers		MS	See Lane Transitions below									
Lane Transitions	N/A											
Max. Superelevation		MS	10%. DM Section 640.05 (Feb. 2002) and Fig. 640-11a (Feb. 2002)									
			<table> <thead> <tr> <th><u>Location</u></th> <th><u>Design Speed</u></th> <th><u>Required</u></th> </tr> </thead> <tbody> <tr> <td>KR 11+85</td> <td>50 mph</td> <td>8%</td> </tr> <tr> <td>KR 17+32</td> <td>25 mph</td> <td>2%</td> </tr> </tbody> </table>	<u>Location</u>	<u>Design Speed</u>	<u>Required</u>	KR 11+85	50 mph	8%	KR 17+32	25 mph	2%
<u>Location</u>	<u>Design Speed</u>	<u>Required</u>										
KR 11+85	50 mph	8%										
KR 17+32	25 mph	2%										
Superelevation Transitions		MS	DM Section 640.05(4) and (5), Figure 640-14b (Feb. 2002)									
Lane Cross Slope		MS	2%. DM Section 640.04(1), (Feb. 2002)									
Ramp Shoulders												
Shoulder Width – Inside		MS	2 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)									
Shoulder Width - Outside		MS	8 feet. DM Section 940.05(4) and Figure 940-3 (Sept. 2002)									
Shoulder Cross Slopes		MS	Same as adjacent lane, DM Section 640.04(3), (Feb. 2002)									
Ramp Terminal Design												

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Project Name I-5 Everett HOV

Design Element (KR Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference
Design Vehicle		MS	WB-50/WB-67 per DM Section 910.05 and Figure 910-3 (May 2001)
Intersection Radii - Left		MS	55 ft. DM Chapter 910 and Fig. 910-19 (May 2001)
Intersection Radii – Right		MS	55 ft. DM Chapter 910 and Fig. 910-8 (May 2001)
Intersection Angle		MS	90.00°. DM Fig. 910-19 (May 2001)
Sight Distance		MS	DM Section 910.10 and Figure 910-6 (May 2001)
Horizontal Alignment			
Stopping Sight Distance		MS	DM Section 650.05(5) (Nov. 1999) and Fig. 650-2, Fig. 650-3 (Oct. 2002)
			<u>Location</u> <u>Design Speed</u> <u>Required</u> <u>Proposed</u> KR 11+85 50 mph 425 feet 450 feet
Vertical Alignment			
Stopping Sight Distance		MS	333 feet (305 ft required for 40 mph). DM Section 650.05 (Nov. 1999) and Fig. 650-2, Fig. 650-3, Fig 650-4 (June 1999)
			<u>Location</u> <u>Design Speed</u> <u>Required</u> <u>Proposed</u> KR 13+50 40 mph 305 feet 333 feet
Decision Sight Distance			DM Section 650.06 (Nov. 1999) and Fig. 650-5 (April 1998)
Roadside			
Fill Slopes			DM Fig. 640-6b (Feb. 2002)
Ditch Inslopes			DM Fig. 640-6b (Feb. 2002)
Back Slopes & Cut Slopes			DM Fig. 640-6b (Feb. 2002)
Clearzone			DM Section 700.04 and 700.05 (May 2003) and Fig. 700-1 (May 2003)
Ramp Spacing		MS	DM Fig. 940-5 (Sept. 2002)
			<u>Spacing Type</u> <u>Spacing Req'd</u> <u>Spacing Provided</u> Everett Ave NB On (JR2) to Marine View NB Off (KR) 2000 feet 2400 feet
Gore Width		MS	For off connections per DM Section 940.06(5b) (Sept. 2002) and Fig. 940-11 (Sept. 2002) Reserve Area Length for 70mph Design Speed = 55 ft
			<u>Reserve Area</u> <u>Required Gore Width</u> <u>Provided Gore Width</u> <u>Ramp</u> <u>Length Provided</u> <u>at Physical Nose</u> <u>at Physical Nose</u> KR 60 feet 12+4+4= 20 feet 20 feet
Gore Radius		MS	4 feet minimum. DM Section 940.06(5b) and Fig. 940-11a,b (Sept. 2002)
Acceleration Length	N/A		

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Project Name I-5 Everett HOV

Design Element (KR Line)	N/A	Status	List Standard Criteria and DM Section/ Figure Reference						
Gap Acceptance Length (Parallel type on-connections only)	N/A								
Deceleration Length		MS	DM Section 940.06 (5a) (Sept. 2002), Figure 940-10 (Sept. 2002), mainline at 70 mph <table> <thead> <tr> <th>Ramp</th> <th>Length Required</th> <th>Length Provided</th> </tr> </thead> <tbody> <tr> <td>KR (70- 50mph)</td> <td>340 feet</td> <td>355 feet</td> </tr> </tbody> </table>	Ramp	Length Required	Length Provided	KR (70- 50mph)	340 feet	355 feet
Ramp	Length Required	Length Provided							
KR (70- 50mph)	340 feet	355 feet							
Ramp/Mainline Tapers	N/A								
Enforcement Area	N/A								
Ramp Meter Storage	N/A								

Status - MS; Meets Standards ENNF; Existing Nonstandard, No Fix ENF; Existing Nonstandard, Will Fix PN; Proposed Nonstandard

Addendum #2
1/12/2005